



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/079,988	02/20/2002	Ross V. La Fetra	100200334-1	6883

7590                    08/17/2004

HEWLETT-PACKARD COMPANY  
Intellectual Property Administration  
P.O. Box 272400  
Fort Collins, CO 80527-2400

EXAMINER

BAKER, STEPHEN M

ART UNIT

PAPER NUMBER

2133

DATE MAILED: 08/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/079,988	LA FETRA, ROSS V.
Examiner	Art Unit	
Stephen M. Baker	2133	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_.
- 2a) This action is **FINAL**.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_ is/are allowed.
- 6) Claim(s) 1-20 is/are rejected.
- 7) Claim(s) \_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                    | Paper No(s)/Mail Date. ____ .   |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____ . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|   | 6) <input type="checkbox"/> Other: ____ .                                   |

**DETAILED ACTION*****Oath/Declaration***

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because: No oath or declaration has apparently been provided

***Specification***

2. The abstract of the disclosure is objected to because "is selected to replace" apparently should be "is selected to be replaced"; "is configured to redirect" is vague and confusing in context and apparently should be "is subsequently configured to redirect.

Correction is required. See MPEP § 608.01(b).

3. The disclosure is objected to because of the following informalities:

In the abstract, paragraph [0009] and paragraph [0017], a "memory word" is described as being "divided into the memory banks", implying that each "memory word" is striped across the non-spare banks, and in paragraph [0018] a "memory word" is described as including data bits and ECC bits, implying the existence of multiple parity banks among the non-spare banks in a stripe.

Paragraph [0019] states that the disclosed method "builds on the RAID 3 concept", which implies the existence of just one parity bank in a stripe. The

detailed description, in contradiction to all of the above-cited paragraphs, discloses no striping across banks and so shows no level of RAID (other than the implicit mirroring provided by a fully populated spare), and paragraphs [0026] and [0027] describe each bank as containing an entire "memory word". The detailed description implies that there is no simple parity or ECC relation between words of non-spare banks, and that each bank has its own separate ECC coded word, instead.

In paragraph [0009], "is selected to replace" apparently should be "is selected to be replaced".

In paragraph [0022], "on-line, in used" apparently should be "on-line, in use".

In paragraph [0027], "Each type of correctable errors" apparently should be "Each type of correctable error situation".

Paragraph [0036] apparently requires additional text, such as "The process may further be repeated to replace every bank in turn" in order to justify claim 4.

Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1, 8, 12 and 17: “a memory word is divided into said memory banks” is apparently incorrect, as it apparently does not correspond to the detailed disclosure.

Claim 4 lacks support in the disclosure.

#### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-4 7-9, 12, 13 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,598,174 to Parks *et al* (hereafter Parks).

Parks discloses a storage device array “memory system” with arrangements for replacing a storage device that is about to fail with an unused spare storage device. Data is striped across the storage devices in Parks’ system, and so “a memory word is divided into said memory ...”. Parks’ system (Fig. 8) includes a hub “repeater”. In a ‘hot copy’ process disclosed by Parks, client data accesses are not blocked while data is being copied from a “selected”

failing (source) storage device into the spare (target) storage device (col. 4, line 8), and writes (Fig. 12) may be performed to both the failing device and the spare device (col. 4, lines 39-43) unless the affected location has not yet been copied (col. 19, lines 1-18). Parks thus discloses "configuring said memory system to perform write operations associated with said selected memory ... to both said selected memory ... and said spare memory ...". The 'hot copy' process involves "performing atomic read and write operations such that content of said selected memory ... is copied to said spare memory ...", with atomicity being provided by means of data lock algorithms (col. 19, lines 45-59). Read operations can be performed using the spare memory, if the data of the location to be read has already been copied to the spare memory (col. 19, lines 27-29). Such read operations, in addition to eventually removing the failing device in Parks' system, provide "configuring ... to redirect operations to be performed on said selected memory ... to said spare memory ...".

Although the storage devices can be semiconductor storage (col. 8, line 64), Parks does not describe such semiconductor storage devices as "memory banks". Official Notice is taken that the usefulness of providing a semiconductor device unit in the form of a "bank", in a conventional manner, was well known at the time the invention was made. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to realize Parks' semiconductor storage units as "banks". Such a realization would have been obvious because the usefulness of providing a semiconductor device unit in the form of a "bank", in a conventional manner, was already well known.

Although Parks states that the failing storage device can be removed while maintaining access to the non-failing devices (col. 3, lines 45-47), Parks does not specifically describe the replacing the failing storage device as "hot swapping". Official Notice is taken that the usefulness of replacing a failing storage unit by "hot swapping" (*i.e.* while the system is still running) was well known at the time the invention was made. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to implement Parks' semiconductor storage units as "hot swappable" units. Such a realization would have been obvious because the usefulness of replacing a failing storage unit by "hot swapping" (*i.e.* while the system is still running) was already well known.

8. Claims 2, 10, 14 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parks as applied to claim 1 above, and further in view of U.S. Patent No. 5,357,509 to Ohizumi (hereafter Ohizumi).

Parks does not disclose copying the content of the spare storage device to the storage device that replaces the failing storage device after the failing device has been copied and replaced.

Ohizumi discloses copying the content of the spare storage device to the storage device that replaces the failing storage device after the failing device has been copied and replaced, providing the advantage that a spare device may then be re-used. It would have been obvious to a person having ordinary skill in the art to enhance Parks' storage system by providing for copying the content of the spare storage device to the storage device that replaces the failing storage

device after the failing device has been copied and replaced. Such an enhancement would have been obvious because Ohizumi teaches that the advantage of a re-usable spare device is provided thereby.

***Allowable Subject Matter***

9. Claims 3-6, 11, 15 and 20 would be allowable if rewritten to overcome the rejections under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

***Conclusion***

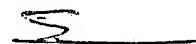
10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen M. Baker whose telephone number is (703) 305-9681. The examiner can normally be reached on Monday-Friday (11:00 AM - 7:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert DeCady can be reached on (703) 305-9595. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2133

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Stephen M. Baker  
Primary Examiner  
Art Unit 2133

smb